Figure 1: WWP1 open reading frame and translation to corresponding polypeptide

	AAAAL	<u>, O</u>	/CII	Cac	my					<u> </u>							
5	1	ATG	GCC	ACT	GCT	TCA	CCA	AGG	TCT	GAT	ACT	AGT	AAT	AAC	CAC	AGT	45
	1	M	A	T	A	S	P	R	S	D	T	S	N	N	H	S	15
	46 16	GGA G	AGG R	TTG L	CAG Q	TTA L	CAG Q	GTA V	ACT T	GTT V	TCT S	AGT S	GCC Ā	AAA K	CTT L	AAA K	90
10	91	AGA	AAA	AAG	AAC	TGG	TTC	GGA	ACA	GCA	ATA	TAT	ACA	GAA	GTA	GTT	135
	31	R	K	K	N	W	F	G	T	A	I	Y	T	E	V	V	45
15	136 46	GTA V	GAT D	GGA G	GAA E	ATT I	ACG T	AAA K	ACA T	GCA A	AAA K	TCC S	AGT S	AGT S	TCT S	TCT S	180 60
	181 61	AAT N	CCA P	AAA K	TGG W	GAT D	GAA E	CAG Q	CTA L	ACT T	GTA V	AAT N	GTT V	ACG T	CCA P	CAG Q	225 75
20	226	ACT	ACA	TTG	GAA	TTT	CAA	GTT	TGG	AGC	CAT	CGC	ACT	TTA	AAA	GCA	270
	76	T	T	L	E	F	Q	V	W	S	H	R	T	L	K	A	90
	271	GAT	GCT	TTA	TTA	GGA	AAA	GCA	ACG	ATA	GAT	TTG	AAA	CAA	GCT	CTG	315
	91	D	A	L	L	G	K	A	T	I	D	L	K	Q	A	L	105
25	316	TTG	ATA	CAC	AAT	AGA	AAA	TTG	GAA	AGA	GTG	AAA	GAA	CAA	TTA	AAA	360
	106	L	I	H	N	R	K	L	E	R	V	K	E	Q	L	K	120
30	361 121	CTT L	TCC S	TTG L	GAA E	AAC N	AAG K	AAT N	GGC G	ATA I	GCA A	CAA Q	ACT T	GGT G	GAA E	TTG L	405 135
	406 136	ACA T	GTT V	GTG V	CTT L	GAT D	GGA G	TTG L	GTG V	ATT I	GAG E	CAA Q	GAA E	TAA N	ATA I	ACA T	450 150
35	451	AAC	TGC	AGC	TCA	TCT	CCA	ACC	ATA	GAA	ATA	CAG	GAA	AAT	GGT	GAT	495
	151	N	C	S	S	S	P	T	I	E	I	Q	E	N	G	D	165
	496	GCC	TTA	CAT	GAA	AAT	GGA	GAG	CCT	TCA	GCA	AGG	ACA	ACT	GCC	AGG	540
	166	A	L	H	E	N	G	E	P	S	A	R	T	T	A	R	180
40	541	TTG	GCT	GTT	GAA	GGC	ACG	AAT	GGA	ATA	GAT	AAT	CAT	GTA	CCT	ACA	585
	181	L	A	V	E	G	T	N	G	I	D	N	H	V	P	T	195
45	586 196	AGC S	ACT T	CTA L	GTC V	CAA Q	AAC N	TCA S	TGC C	TGC C	TCG S	TAT Y	GTA V	GTT V	AAT N	GGA G	630 210
	631 211	GAC D	AAC N	ACA T	CCT P	TCA S	TCT S	CCG P	TCT S	CAG Q	GTT V	GCT A	GCC A	AGA R	CCC P	AAA K	675 225
50	676	AAT	ACA	CCA	GCT	CCA	AAA	CCA	CTC	GCA	TCT	GAG	CCT	GCC	GAT	GAC	720
	226	N	T	P	A	· P	K	P	L	A	S	E	P	A	D	D	240
	721	ACT	GTT	AAT	GGA	GAA	TCA	TCC	TCA	TTT	GCA	CCA	ACT	GAT	AAT	GCG	765
	241	T	V	N	G	E	S	S	S	F	A	P	T	D	N	A	255
55	766	TCT	GTC	ACG	GGT	ACT	CCA	GTA	GTG	TCT	GAA	GAA	AAT	GCC	TTG	TCT	810
	256	S	V	T	G	T	P	V	V	S	E	E	N	A	L	S	270
60	811 271	CCA P	AAT N	TGC C	ACT T	AGT S	ACT T	ACT T	GTT V	GAA E	GAT D	CCT P	CCA P	GTT V	CAA Q	GAA E	855 285
	856 286	ATA I	CTG L	ACT T	TCC S	TCA S	GAA E	AAC N	AAT N	GAA E	TGT	ATT I	CCT P	TCT S	ACC T	AGT S	900 300
	901	GCA	GAA	TTG	GAA	TCT	GAA	GCT	AGA	AGT	ATA	TTA	GAG	CCT	GAC	ACC	945

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315 301 Ε L Ε S Ε Α R S 1 L Ε D TCT GCT TTT GAA GCA GCC AAA TCA AGA 990 946 TCT AAT TCT AGA AGT AGT 316 E 330 CAG CCA GAT GGG TGT ATG GAT CCT GTA CGG CAG CAG TCT GGG AAT 1035 991 С D P 0 345 331 М 1080 GCC AAC ACA GAA ACC TTG CCA TCA GGG TGG GAA CAA AGA AAA GAT 1036 10 360 346 CCT CAT GGT AGA ACC TAT TAT GTG GAT CAT AAT ACT CGA ACT ACC 1125 1081 375 361 1126 ACA TGG GAG AGA CCA CAA CCT TTA CCT CCA GGT TGG GAA AGA AGA 1170 376 P 390 Е 0 L 1171 GTT GAT GAT CGT AGA AGA GTT TAT TAT GTG GAT CAT AAC ACC AGA 1215 391 R Y Y 405 R R 20 ACA ACA ACG TGG CAG CGG CCT ACC ATG GAA TCT GTC CGA AAT TTT 1260 1216 420 406 Q R T М Ε 1261 GAA CAG TGG CAA TCT CAG CGG AAC CAA TTG CAG GGA GCT ATG CAA 1305 435 421 S R N 0 CAG TTT AAC CAA CGA TAC CTC TAT TCG GCT TCA ATG TTA GCT GCA 1350 1306 450 436 R Y L Y S Α S Μ Ν Α GAA AAT GAC CCT TAT GGA CCT TTG CCA CCA GGC TGG GAA AAA AGA 1395 1351 465 4.51 Ε Р Y G Р T, P Р G \mathbf{E} K 1396 GTG GAT TCA ACA GAC AGG GTT TAC TTT GTG AAT CAT AAC ACA AAA 1440 466 D S D R V Υ F V N Н N Т 480 ACA ACC CAG TGG GAA GAT CCA AGA ACT CAA GGC TTA CAG AAT GAA 1485 1441 481 0 Е D Р R T 0 G L 0 N 495 GAA CCC CTG CCA GAA GGC TGG GAA ATT AGA TAT ACT CGT GAA GGT 1530 1486 40 496 Ρ L Ρ F. G W Ε Ι R Y Т R Ε 510 GTA AGG TAC TTT GTT GAT CAT AAC ACA AGA ACA ACA ACA TTC AAA 1531 1575 511 V D Н N Т R T Т 525 Y F T 45 1576 GAT CCT CGC AAT GGG AAG TCA TCT GTA ACT AAA GGT GGT CCA CAA 1620 N G K S S v T 540 G ATT GCT TAT GAA CGC GGC TTT AGG TGG AAG CTT GCT CAC TTC CGT 1621 1665 G F 555 R W F 50 TAT TTG TGC CAG TCT AAT GCA CTA CCT AGT CAT GTA AAG ATC AAT 1710 1666 S N S V 570 0 Α L Ρ Н Ι GTG TCC CGG CAG ACA TTG TTT GAA GAT TCC TTC CAA CAG ATT ATG 1755 1711 Т L F Е D S F 585 1756 GCA TTA AAA CCC TAT GAC TTG AGG AGG CGC TTA TAT GTA ATA TTT 1800 600 D R R 1801 AGA GGA GAA GGA CTT GAT TAT GGT GGC CTA GCG AGA GAA TGG 1845 615 1846 TTT TTC TTG CTT TCA CAT GAA GTT TTG AAC CCA ATG TAT TGC TTA 1890 V Н Ε L N P M 630 65

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1891 TTT GAG TAT GCG GGC AAG AAC AAC TAT TGT CTG CAG ATA AAT CCA 1935 G N N Y 645 K С 1936 GCA TCA ACC ATT AAT CCA GAC CAT CTT TCA TAC TTC TGT TTC ATT 1980 S Ι D Н L 660 1981 GGT CGT TTT ATT GCC ATG GCA CTA TTT CAT GGA AAG TTT ATC GAT 2025 661 , A F Α M L 675 Ι Н G 2026 ACT GGT TTC TCT TTA CCA TTC TAC AAG CGT ATG TTA AGT AAA AAA 2070 G Р F K 690 L 2071 CTT ACT ATT AAG GAT TTG GAA TCT ATT GAT ACT GAA TTT TAT AAC 2115 691 I K D L Ē S I D T Ε F 705 15 TCC CTT ATC TGG ATA AGA GAT AAC AAC ATT GAA GAA TGT GGC TTA 2116 2160 R D N Ι N Ε E 720 GAA ATG TAC TTT TCT GTT GAC ATG GAG ATT TTG GGA AAA GTT ACT 2205 20 721 S D M Ε 735 TCA CAT GAC CTG AAG TTG GGA GGT TCC AAT ATT CTG GTG ACT GAG 2250 Н D ĸ G S N 750 2251 GAG AAC AAA GAT GAA TAT ATT GGT TTA ATG ACA GAA TGG CGT TTT 2295 751 Ε N K D E Y 1 G L M T E R 765 2296 TCT CGA GGA GTA CAA GAA CAG ACC AAA GCT TTC CTT GAT GGT TTT 2340 766 S R G 0 E · O Т K 780 30 2385 2341 AAT GAA GTT GTT CCT CTT CAG TGG CTA CAG TAC TTC GAT GAA AAA 781 0 795 2386 GAA TTA GAG GTT ATG TTG TGT GGC ATG CAG GAG GTT GAC TTG GCA 2430 35 796 810 2431 GAT TGG CAG AGA AAT ACT GTT TAT CGA CAT TAT ACA AGA AAC AGC 2475 811 825 40 2476 AAG CAA ATC ATT TGG TTT TGG CAG TTT GTG AAA GAG ACA GAC AAT 2520 840 2521 GAA GTA AGA ATG CGA CTA TTG CAG TTC GTC ACT GGA ACC TGC CGT 2565 841 855 L 2566 TTA CCT CTA GGA GGA TTT GCT GAG CTC ATG GGA AGT AAT GGG CCT 2610 856 G 870 Α Е L Μ G G 2611 CAA AAG TTT TGC ATT GAA AAA GTT GGC AAA GAC ACT TGG TTA CCA 2655 50 871 Ι Ε K G K D 885 2656 AGA AGC CAT ACA TGT TTT AAT CGC TTG GAT CTA CCA CCA TAT AAG 2700 С F R D 900 N L L Ρ Ρ Y 2701 AGT TAT GAA CAA CTA AAG GAA AAA CTT CTT TTT GCA ATA GAA GAG 2745 901 · L Ε 915 K K L Ε L ACA GAG GGA TTT GGA CAA GAA GAT TAC AAG GAC GAC GAC GAT AAG 2746 2790 916 T G G 0 Ε D Y K 930 D D D D 2791 TGA 2793 931

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Figure 2: WWP1 antisense fragment

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Figure 3: Alignment between the WWP1 open reading frame and the WWP1 antisense fragment of Figure 2

5	WWP1 WWP1		1 1	ATGGCCACTGCTTCACCAAGGTCTGATACTAGTAATAACCACAGTGGAAGGTTGCAGTTA
10	WWP1		61 1	CAGGTAACTGTTTCTAGTGCCAAACTTAAAAGAAAAAAAA
	WWP1 WWP1		121 1	TATACAGAAGTAGTTGTAGATGGAGAAATTACGAAAACAGCAAAATCCAGTAGTTCTTCT
15	WWP1 WWP1		181 1	AATCCAAAATGGGATGAACAGCTAACTGTAAATGTTACGCCACAGACTACATTGGAATTT
	WWP1 WWP1		241 1	CAAGTTTGGAGCCATCGCACTTTAAAAGCAGATGCTTTATTAGGAAAAGCAACGATAGAT
20	WWP1 WWP1		301 1	TTGAAACAAGCTCTGTTGATACACAATAGAAAATTGGAAAGAGTGAAAGAACAATTAAAA
25	WWP1 WWP1		361 1	CTTTCCTTGGAAAACAAGAATGGCATAGCACAAACTGGTGAATTGACAGTTGTGCTTGAT
	WWP1 WWP1		421 1	GGATTGGTGATTGAGCAAGAAATATAACAAACTGCAGCTCATCTCCAACCATAGAAATA
30	WWP1 WWP1		481 1	CAGGAAAATGGTGATGCCTTACATGAAAATGGAGAGCCTTCAGCAAGGACAACTGCCAGG
	WWP1 WWP1		541 1	TTGGCTGTTGAAGGCACGAATGGAATAGATAATCATGTACCTACAAGCACTCTAGTCCAA
35	WWP1 WWP1		601 1	AACTCATGCTGCTCGTATGTAGTTAATGGAGACAACACCCTTCATCTCCGTCTCAGGTT
40	WWP1 WWP1		661 1	GCTGCCAGACCCAAAAATACACCAGCTCCAAAACCACTCGCATCTGAGCCTGCCGATGAC
	WWP1 WWP1		721 1	ACTGTTAATGGAGAATCATCCTCATTTGCACCAACTGATAATGCGTCTGTCACGGGTACT
45	WWP1 WWP1		781 1	CCAGTAGTGTCTGAAGAAAATGCCTTGTCTCCAAATTGCACTAGTACTACTGTTGAAGAT
	WWP1 WWP1		841 1	CCTCCAGTTCAAGAAATACTGACTTCCTCAGAAAACAATGAATG
50	WWP1 WWP1	ORF AS	901 1	GCAGAATTGGAATCTGAAGCTAGAAGTATATTAGAGCCTGACACCTCTAATTCTAGAAGT
55	WWP1 WWP1	ORF	961 1	AGTTCTGCTTTTGAAGCAGCCAAATCAAGACAGCCAGATGGGTGTATGGATCC <mark>TGTA</mark> CGG
	WWP1	ORF	8	CAGCAGTCTGGGAATGCCAACACAGAA <mark>ACC</mark> TTGCCATCA <mark>-</mark> GGGTGGGAACAAAGAAAAGA CAGCAGTCTGGGAATGCCAACACAGAA <mark>N</mark> CNTTGCCATCA <mark>G</mark> GGGTGGGAACAAAGAAAAGA
60	WWP1	ORF AS	68	TCCTCATGGTAGA <mark>ACC</mark> TATTATGTGG <mark>A</mark> TCATAAT <mark>A</mark> CTCGAACTACCACATGGGAGAGACC TCCTCATGGTAGA <mark>G</mark> C <mark>G</mark> TATTATGTGG <mark>N</mark> TCATAAT <mark>G</mark> CTCGAACTACCACATGGGAGAGACC
	WWP1	ORF	1140 128	ACAACCTTTACCTCCAGGTTGGGAAAGAAGAGTTGATGATCGTAGA <mark>G</mark> GAGTTTATTATGT ACAACCTTTACCTCCAGGTTGGGAAAGAAGAGTTGATGATCGTAGA <mark>G</mark> GAGTTTATTATGT

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	WWP1 WWP1		1200 188	GGATCATAACACCAGAACAACGAGGGCAGCGGCCTACCATGGAATCTGTCCG <mark>A</mark> AATTT GGATCATAACACCAGAACAACGACGTGGCAGCGGCCTACCATGGAATCTGTCCG <mark>N</mark> AATTT
5	WWP1 WWP1		1260 248	TGA <mark>A</mark> CAGTGGCAATCTCAGCGGAACCAATTGCAGGGAGCTATGCAACAGTTTAACCAACG TGA <mark>N</mark> CAGTGGCAATCTCAGCGGAACCAATTGCAGGGAGCTATGCAACAGTTTAACCAACG
10	WWP1 WWP1		1320 308	ATACCTCTATTCGGCTTCAATGTTAGCTGCAGAAAATGACCCTTATGGACCTTTGCCACC ATACCTCTATTCGGCTTCAATGTTAGCTGCAGAAAATGACCCTTATGGACCTTTGCCACC
	WWP1 WWP1		1380 368	AGGCTGGGAAAAAAGAGTGGATTCAACAGACAGGGTTTACTTTGTGAATCATAACACAAA AGGCTGGGAAAAAAGAGTGGATTCAACAGACAGGGTTTACTTTGTGAATCATAACACAAA
15	WWP1 WWP1		1440 428	AACAACCCAGTGGGAAGATCCAAGAACTCAAGGCTTACAGAATGAAGAACCCCTGCCAGA AACAACCCAGTGGGAAGATCCAAGAACTCAAGGCTTACAGAATGAAGAACCCCTGCCAGA
	WWP1 WWP1		1500 488	AGGCTGGGAAATTAGATATACTCGTGAAGGTGTAAGGTACTTTGTTGATCATAACACAAG AGGCTGGGAAATTAGATATACTCGTGAAGGTGTAAGGTACTTTGTTGATCATAACACAAG
20	WWP1 WWP1		1560 548	AACAACAACATTCAAAGATCCTCGCAATGGGAAGTCATCTG <mark>TA</mark> ACTAAAGG <mark>T</mark> GGTCCACA AACAACAACATTCAAAGATCCTCGCAATGGGAAGTCATCTG <mark>-N</mark> ACTAAAGG <mark>-</mark> GGTCCACA
25	WWP1 WWP1		1620 606	AATTGCTTATGAACGCGGCTTTAGGTGGAAGCTTGCTCACTTCCGTTATTTGTGCCAGTC AA TGCTTA-NAACGCGGCGG
25	WWP1 WWP1		1680 624	TAATGCACTACCTAGTCATGTAAAGATCAATGTGTCCCGGCAGACATTGTTTGAAGATTC
30	WWP1 WWP1		1740 624	CTTCCAACAGATTATGGCATTAAAACCCTATGACTTGAGGAGGCGCTTATATGTAATATT
	WWP1 WWP1		1800 624	TAGAGGAGAAGAAGGACTTGATTATGGTGGCCTAGCGAGAGAATGGTTTTTCTTGCTTTC
35	WWP1 WWP1		1860 624	ACATGAAGTTTTGAACCCAATGTATTGCTTATTTGAGTATGCGGGCAAGAACAACTATTG
40	WWP1 WWP1		1920 624	TCTGCAGATAAATCCAGCATCAACCATTAATCCAGACCATCTTTCATACTTCTGTTTCAT
40	WWP1 WWP1		1980 624	TGGTCGTTTTATTGCCATGGCACTATTTCATGGAAAGTTTATCGATACTGGTTTCTCTTT
45	WWP1		2040 624	ACCATTCTACAAGCGTATGTTAAGTAAAAAACTTACTATTAAGGATTTGGAATCTATTGA
	WWP1		624	TACTGAATTTTATAACTCCCTTATCTGGATAAGAGATAACAACATTGAAGAATGTGGCTT
50	WWP1 WWP1		2160 624	AGAAATGTACTTTTCTGTTGACATGGAGATTTTGGGAAAAGTTACTTCACATGACCTGAA
55	WWP1		624	GTTGGGAGGTTCCAATATTCTGGTGACTGAGGAGAACAAAGATGAATATATTGGTTTAAT
	WWP1	AS	624	GACAGAATGGCGTTTTCTCGAGGAGTACAAGAACAGACCAAAGCTTTCCTTGATGGTTT
60	WWP1	AS	624	TAATGAAGTTGTTCCTCTTCAGTGGCTACAGTACTTCGATGAAAAAGAATTAGAGGTTAT
	WWP1	. AS	624	GTTGTGTGGCATGCAGGAGGTTGACTTGGCAGATTGGCAGAGAAATACTGTTTATCGACA
65	WWP1	ORF	2460	TTATACAAGAAACAGCAAACCATTTGGTTTTGGCAGTTTGTGAAAGAGACAGAC

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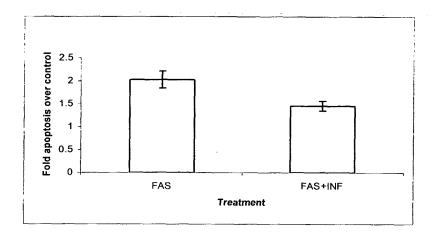
	WWP1	AS	624	
5	WWP1 WWP1		2520 624	TGAAGTAAGAATGCGACTATTGCAGTTCGTCACTGGAACCTGCCGTTTACCTCTAGGAGG
J	WWP1 WWP1		2580 624	ATTTGCTGAGCTCATGGGAAGTAATGGGCCTCAAAAGTTTTGCATTGAAAAAGTTTGGCAA
10	WWP1 WWP1		2640 624	AGACACTTGGTTACCAAGAAGCCATACATGTTTTAATCGCTTGGATCTACCACCATATAA
	WWP1 WWP1		2700 624	GAGTTATGAACAACTAAAGGAAAAACTTCTTTTTGCAATAGAAGAGACAGAGGGATTTGG
15	WWP1	ORF	2760	ACAAGAAGATTACAAGGACGACGATAAGTGA
	WWP1	AS	624	

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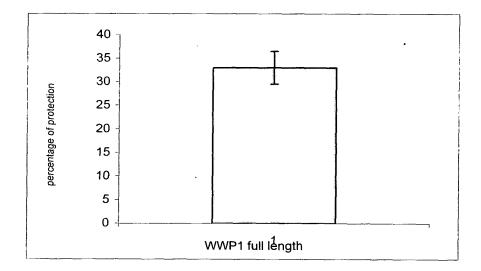
Figure 4: validation of the anti-apoptotic effect of WWP1

a)

5



b)



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